

ACHANY WIND FARM
ENVIRONMENTAL STATEMENT
VOLUME 1 – NON TECHNICAL SUMMARY

OCTOBER 2005



NON-TECHNICAL SUMMARY

A INTRODUCTION

Scottish and Southern Energy has submitted a planning application for a 41.4 MW, 23 turbine windfarm at Achany, near Lairg in Sutherland (Figure 1.1). The application was accompanied by an Environmental Statement, which recorded the findings of an Environmental Impact Assessment. This Non-Technical Summary summarises the Environmental Statement.

B BACKGROUND

Man made emissions of greenhouse gases, in particular carbon dioxide, are widely believed to be accelerating the process of climate change. Concern about the environmental, social and economic consequences of climate change has driven agreements to control emissions of greenhouse gases. As part of the European Union plan, the UK has a target to reduce greenhouse gas emissions by 12.5% by 2008-2012, against a 1990 baseline¹.

A key element of the greenhouse gas reduction programme is the further promotion of renewable energy, by means of a market mechanism referred to as the Renewables Obligation. The Renewables Obligation incentivises electricity suppliers such as Scottish and Southern Energy to develop additional renewable energy supplies, and the Fairburn proposal forms a part of this wider programme.

Scottish and Southern Energy's renewables programme includes onshore wind, refurbishing existing hydro, new hydro and co-firing of biomass. In addition, new and emerging technologies including offshore wind, tidal, solar and small scale wind are being evaluated and supported.

The Achany site was selected, along with other sites, after a detailed site selection process that considered technical and environmental factors. The site is not subject to any nature conservation or other designations.

C THE DEVELOPMENT

The windfarm would comprise the following main elements:

- 23 wind turbines, with a tip height up to 100m high, on reinforced concrete foundations, with internal or external transformer
- site tracks allowing access to each turbine, extending from an access track based upon an existing forest access track
- a small control building / sub-station
- anemometer masts

Turbines would be connected to the control building by underground cables, and the whole windfarm would connect to the grid at Lairg Power Station, also by means of underground cables.

Construction would last approximately 9 months, involving civil, electrical and turbine contractors. A temporary construction compound would be established. Rock will be required for various purposes, in particular for track construction, and borrow pits will be formed on site to avoid the need to import stone.

¹ In addition there is a voluntary target of 20% reduction by 2010.

Environmental factors have influenced the design and layout of the windfarm, in particular landscape and visual, ecology and birds considerations.

Appropriate best practice measures will be incorporated into the detailed design and construction methods.

The windfarm would operate for nominally 25 years, typically generating enough electricity for 23 000 homes annually. At the end of 25 years the site would be decommissioned.

D ENVIRONMENTAL IMPACT ASSESSMENT

Environmental Impact Assessment is a process that considers how a proposed development will change existing environmental conditions, and what the consequences will be. It therefore informs both the project design and planning decision-making processes.

The process, which is reported in the Environmental Statement comprises the following stages:

- Scoping, to define the issues which are to form the basis of the Environmental Impact Assessment
- Consultation, to supplement the Scoping and agree any specific methodologies
- Baseline reviews, to establish relevant existing conditions on the basis of currently available information and / or new surveys
- Characterisation of the value or sensitivity of potentially affected elements of the environment (receptors)
- Prediction and characterisation of the changes experienced by the receptors (impacts)
- Evaluation of the consequences for the receptor of the impact (effect)

The assessment of effects for some environmental aspects is based upon established methodologies, techniques and criteria. These are applied as appropriate.

E PLANNING CONTEXT

The planning context study considers relevant policies and guidance at national, regional and local level.

The key plans, policies and guidance relevant to the application are:

- National Planning Policy Guideline (NPPG) 6 *Renewable Energy* (2000);
- Planning Advice Note (PAN) 45 *Renewable Energy Technologies* (2002);
- The Highland Structure Plan (2001);
- South and East Sutherland Local Plan (2000); and
- Golspie and Lairg Local Plan (1983).

NPPG 6 covers locational considerations, the need for an Environmental Impact Assessment (EIA), the interaction with tourism and recreation and the criteria for nearby settlements. PAN 45 outlines potential environmental effects that should be assessed in an EIA. The Highland Structure Plan contains strategic planning objectives and strategic policies based on sustainable development, and lists criteria which should be assessed in the EIA. It expresses the support of the Council for renewable energy developments provided these can be developed in an environmentally acceptable manner. The Local Plans translate the policies of the Structure Plan into more detailed land allocations for the area surrounding the proposed wind farm.

There are no aspects of the proposed wind farm development which are non-compliant with national planning guidance and advice, or local planning policies or their aims.

F LANDSCAPE AND VISUAL ASSESSMENT

A landscape and visual assessment has been carried out which examined the potential for impacts of the project both on the overall landscape and its effect on views up to 30km from the site. The assessment concluded that the final design had responded to the landscape and setting in a positive way.

The proposed wind farm at Achany will introduce a group of man made structures into a large scale area of moorland north west of Lairg. While the introduction of the turbines will be a new landscape feature, the layout is considered to be well designed and sited with due consideration to the potential landscape and visual effects.

The highest level of landscape effects are confined to a limited area within 5-7km radius of the project, where changes will be evident, but the character of the area would be retained. The landscape in the vicinity of the site would remain upland moorland with forestry on the side slopes, and remain elevated, exposed and windswept. No significant effects are predicted within the designated National Scenic Areas and Areas of Great Landscape Value within the 30km study area.

Significant visual effect are limited to local views from dispersed settlement at Durla and Netherton and from dispersed settlement on higher ground surrounding Lairg, and from limited parts of the Kyle of Sutherland, as well as road users travelling on the A839 between Rosehall and Lairg and a short section of the A836 at Achany Glen. Any new wind farm development is likely to result in significant effects on the landscape character and visual amenity of the locality. In the case of the Achany Wind Farm, a 30km radius study area has been assessed and significant effects identified in a relatively small area in close proximity to the application site.

G ECOLOGY

The ecology assessment considers an area encompassing the development site including access tracks and a 500m buffer zone. The main effects considered in the ecological assessment are:

- Direct loss of habitat
- Disturbance of fauna
- Indirect effects of siltation

Desk and field studies were completed to determine the baseline conditions on the site. The field surveys included a Phase 1 habitat survey, NVC survey and faunal species surveys for otter, badger, water vole, bats, pine marten and wildcat.

The study area lies on high ground between areas of conifer plantation along Strath Grudie to the north and Strath Oykel to the south. The area is characterised by open, undulating moorland, a typical habitat of Sutherland. Watercourses flow off the site into the Grudie Burn to the north and east, and into the River Cassley to the west. There are no statutory designated sites for nature conservation within the development site. The eastern edge of the Grudie Peatlands SSSI and the Caithness and Sutherland Peatlands SAC, however, lie within the western margins of the study area.

The study area is a managed moor, mainly used for grazing, but also for sporting pursuits. The main habitat identified in the study area was wet modified bog. Wet heath, acid grassland, flush

and conifer plantation were also recorded. The bog habitat has been degraded by grazing and man-made drainage. Otter was present in the western end of the study area; water vole was located along some watercourses. Salmon and freshwater pearl mussel was not recorded within the study area, although salmon is found in the Rivers Oykel and Cassley and the lower reaches of their tributaries. Freshwater pearl mussel is found further downstream in the River Oykel below Altass.

The wind farm layout has been designed to avoid the most sensitive areas of vegetation and to minimise watercourse crossings and therefore minimise impacts on riparian habitats and species. Pre-construction surveys will be completed for otter and water vole in order that sensitive areas can be identified and demarcated. Culvert design will ensure that the passage of otter is not impeded. Measures will be implemented to avoid siltation during construction. Reinstatement of vegetation will be carried out following construction where possible. Following the implementation of these mitigation measures, no significant effects on habitats, species or designated sites are expected as a result of the wind farm development.

H BIRDS

The birds assessment focussed on an area within 500m of the development for all species, and extended to more than 2km from the site for other species. The birds assessment has informed the layout of the proposal, in particular with respect to hen harrier.

The main potential effects considered are:

- Disturbance during construction, and associated indirect habitat loss
- Disturbance during operation, and associated habitat loss
- Collision with operational turbines

The site is not subject to any nature conservation designations. The Grudie Peatlands SSSI, which is a component of the Caithness and Sutherland Peatlands SPA is located to the west of the site, and the Lairg and Strath Brora Lochs SPA is located to the north east.

Surveys conducted in 2003 and 2004 identified the following species of conservation interest within the survey area:

- Hen harrier breed in forestry to the south of the site
- Golden plover breed throughout the survey area
- Golden eagle, osprey, merlin and peregrine make occasional use of the survey area, but do not breed within 2km of the site
- One pair of red throated diver was recorded breeding 3km from the site. A single black throated diver was recorded to the north of the site, but there was no evidence of breeding activity
- A single record of wood sandpiper was made, within the SPA, but this was interpreted as a passage bird.
- Greenshank were recorded within the survey area
- Seven black grouse leks were recorded within forestry to the south of the site
- Skylark are moderately abundant throughout the survey area
- Two pairs of song thrush breed in the survey area, and are common in forestry to the south.

The assessment considered potential effects on the qualifying interests of the two SPAs and on 'wider countryside' birds.

By considering historical data, likely bird behaviour, and data collected during the current surveys, it is concluded that a significant effect on the qualifying interests of the Caithness and Sutherland Peatlands SPA and on the Lairg and Strath Brora Lochs SPA is not likely.

In terms of wider countryside interests, significance was assessed in terms of effects on the regional population. No significant effects were identified on wider countryside species.

An ongoing monitoring programme is proposed.

I NOISE

The assessment of noise impact considers both the construction and operational phases of the development. The assessment considers the closest residential receptors which are located 1.6-2.2 km from the wind farm site.

Background noise levels were recorded at the closest receptors to the site over a period of 14 days. The local noise environment is relatively quiet with its principal noise sources being the effects of wind, agricultural activities and occasional fast jets.

The background noise levels were correlated with measured wind speed data to determine operational noise limits for the site based on existing noise levels. Predicted operational noise levels at the closest receptors to the site are below the established noise limits. The operational noise effects of the wind farm are expected to be not significant.

Noise levels at the closest receptors to the site during the construction phase of the development were calculated assuming worst case conditions. The predicted noise levels were below advisory limits. The noise effects of the construction of the wind farm are expected to be not significant.

J CULTURAL HERITAGE

The cultural heritage assessment covers an area encompassing the main wind farm site, the access track, and land within a 2 km radius of the wind turbines. Additional searches were also made within an extended zone up to 5 km beyond the wind farm site specifically for protected sites (including scheduled ancient monuments, listed buildings, designed landscapes and historic gardens), which might be subject to visual effects from the proposed wind farm.

The main impacts considered are:

- Loss, damage or severance of cultural heritage sites
- Effects on the setting of cultural heritage sites

Desk-based research and a detailed walkover survey were undertaken which revealed no known or visible archaeological remains located within the limits of the proposed wind farm. The majority of cultural heritage remains known in the vicinity are post-medieval farmsteads and prehistoric burials and settlements. It is noted that these sites are frequently located at lower elevations, often in the more sheltered glens and valleys of the area. However, the wider study area is also rich in both prehistoric and historic archaeological remains and it could therefore be said that a low probability exists of disturbing hitherto unknown, buried, archaeological remains during ground-breaking works on the site. Accordingly it is recommended that a representative proportion of the ground-breaking works are subject to an archaeological watching brief during the development.

The assessment indicates that the significance of visual effects on the scheduled ancient monuments and listed buildings within the assessment area will be minor.

In conclusion, with appropriate mitigation measures implemented, no significant effects on cultural heritage are predicted.

K SOIL AND WATER

The soil and water assessment considers receptors in the physical site area, access tracks and offsite receptors such as the Rivers Oykel and Grudie and local inhabitants.

The main potential effects considered are:

- Pollution of Surface waters and Groundwaters by contaminants generated through wind farm construction and operation.
- Pollution of Surface waters through increased sediment load generated through wind farm construction and operation.
- Effects to hydrological and hydrogeological regimes.
- Effects to peat, glacial soil and slope stability.

The site consists variously of moor underlain by Peat and Glacial Soils, which overly bedrock. The hydrology comprises a number of streams, which are connected to a system of man made peat gullies. The hydrogeology is mainly a system of fissures that transmit groundwater through the rock. Precipitation falling on the site is divided into overland flow through the hydrological network and infiltration into the groundwater. Ultimately precipitation recharges to the two main rivers to the north and south of the site.

The layout of the wind farm has taken into account sensitivity of soil and water bodies. Where necessary these have been avoided via a buffer zone in order to minimise effects. A number of potentially harmful effects have been identified from the proposed wind farm construction. It is proposed in all cases that these effects can be minimised through a series of construction method statements, which will specify the most appropriate working practices. All significant effects will be managed in this way. With appropriate mitigation measures implemented no significant effects on soil and water are predicted.

L ROADS AND TRAFFIC

The roads and traffic assessment for construction traffic considers transport links between the Trunk Road network at the A9(T) Dornoch Bridge and the site access. The movement of turbine equipment has been considered from the potential port of entry at Invergordon

The main potential effects considered are:

- Traffic congestion due to an increase in HGV traffic
- Traffic congestion due to an increase in non-HGV traffic
- Abnormal road wear and tear

The road network in the Highland Council area is of a relatively low density, and is generally characterised by principle roads (including trunk roads) radiating from Inverness along natural communication corridors (e.g. through main straths and along the east and north coast), and a network of local secondary and minor roads. The proposed site is therefore in relatively close

proximity to a well developed road network, but relies on less well developed roads for final access.

National and local transport policies were reviewed to allow a desktop hierarchy of roads to be prepared, and site visits were undertaken to undertake a visual review of conditions, and to identify sensitive receptors. A preferred route for construction traffic was derived, from the A9(T) following the A949 via Spinningdale to Bonar Bridge, the A836 to Lairg and then the A839 to the Site Access junction. The preferred route for turbine components is from Invergordon port facility to the Dornoch Bridge Roundabout using the B817 and minor road then the A9(T) northbound joining the A839 via Rogart to Lairg, then westward towards to the Site Access junction. This route is subject to modifications being made to the approach to and signage around the Black Bridge at Lairg.

The quantities of plant, equipment and materials required for the construction effort were considered, and a delivery profile has been established, identifying the average number of construction vehicle movements (average 10 vehicle round trips per working day over nine months). These movements were then compared in relation to historic traffic flow data to allow the level of impact of increased traffic volumes to be assessed. This showed that, for the locations at which historic traffic data was available, construction traffic would represent an increase of between 2% and 43% of the HGV flow. For all vehicles (construction and staff) the increased flows represented increases of between 3% and 11% of the existing traffic flows. These increased traffic flows are set against low background traffic flows.

The receptors assessed are mostly predicted to experience Low or Medium Significance Impacts, the exception being the A839 single track road from Lairg to the site access, on which the increase in HGV traffic is predicted to have a Significant Impact. Mitigation measures such as on-site concrete batching as opposed to hauling ready-mix to site, a before and after road condition survey and local traffic management measures are proposed which seek to mitigate the impact of traffic during construction.

M AIR AND CLIMATE

The air and climate assessment considered the impact of dust on sensitive receptors, the predicted emissions reduction from fossil fuel fired sources of generation and the potential release of carbon stored in peat as a result of the developments construction.

No dust sensitive receptors were identified within the site boundary. Any dust sensitive receptors in the surrounding area were not considered to be at risk due to the Construction Methods Statement which would advocate best practice with regards to dust management.

The development is estimated to generate 105 800 MWh which is predicted to offset over 90 000 Te of carbon dioxide from coal fired generation annually.

The construction of the windfarm is not likely to release a significant amount of carbon into the atmosphere from existing peat. A review of the literature and guidance concluded that since the development will not significantly affect the hydrology of the peat, then adverse impacts from this source were not likely.

N TELECOMMUNICATIONS AND AVIATION

Civil and military aviation agencies, television and radio transmission operators and mobile telephone network agencies and operators have been consulted. No objections have been raised with respect to telecommunications and aviation interests.

O RECREATION AND TOURISM

The recreation and tourism assessment considers an area that is 30 km in radius from the development site boundary. This is consistent with the landscape and visual amenity study area.

The main potential effects considered are:

- access restrictions
- disturbance of sporting activities
- changes in visual amenity.

The landscape of the study area is an important context for recreation and tourism activity. There is a selection of short walking routes, and some longer walking routes including Munro paths. A National Cycle Network route and a National Tourist Route pass within 4 kilometres of the proposed development site. There are two National Nature Reserves, and fishing is a popular recreational pursuit locally. There are various built heritage centres and other tourist centres within the study area.

The use of an existing track for site access will restrict recreational access during construction, and appropriate signage will be erected on site. There will be substantial visual impact on visitor resources close to the site, and visual effects are predicted for outdoor activities such as fishing, shooting, stalking, cycling and walking. For all other resources and activities, no significant effects are predicted. The effects on the overall level of recreation and tourism activity in the area are expected to be not significant.

P SOCIAL AND ECONOMIC

The social and economic assessment considers an area that is 30 km in radius from the proposed development site boundary. This is consistent with the recreation and tourism study area.

The main potential effects considered are:

- disturbance of economic activity on the proposed development site
- disturbance of other economic activity within the study area.

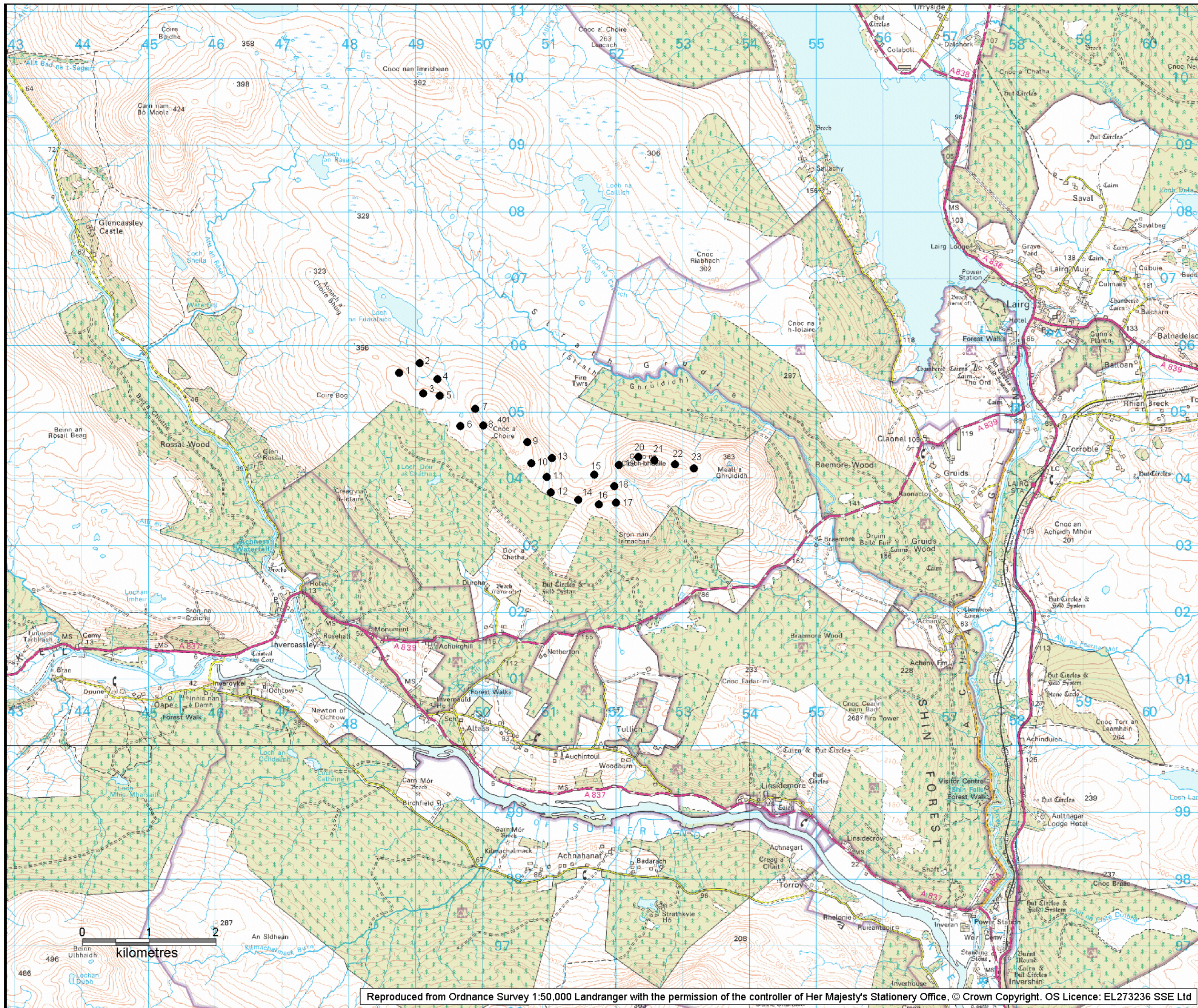
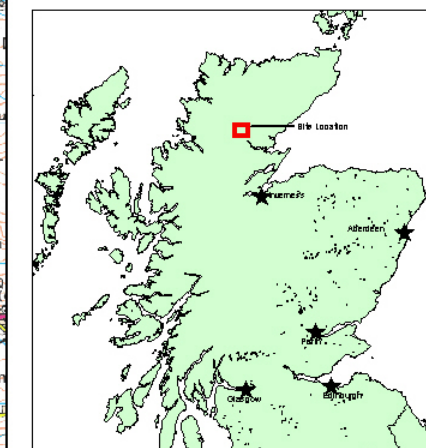
The economy in the study area is chiefly based on tourism. There is a variety of tourist accommodation establishments, and a variety of sporting activities are pursued. There are also commercial fishery operations, and parts of the study area have been used as filming locations. The landscape is an important context for the economic activity in the area.

The use of an existing track for site access will restrict access during construction, and appropriate signage will be erected on site. There will be substantial visual impact on visitor resources close to the site, and significant visual effects are predicted for some sporting activities. However, the effects of this on the overall level of social and economic activity are expected to be not significant.

Figure 1.1

Key

- Turbine location



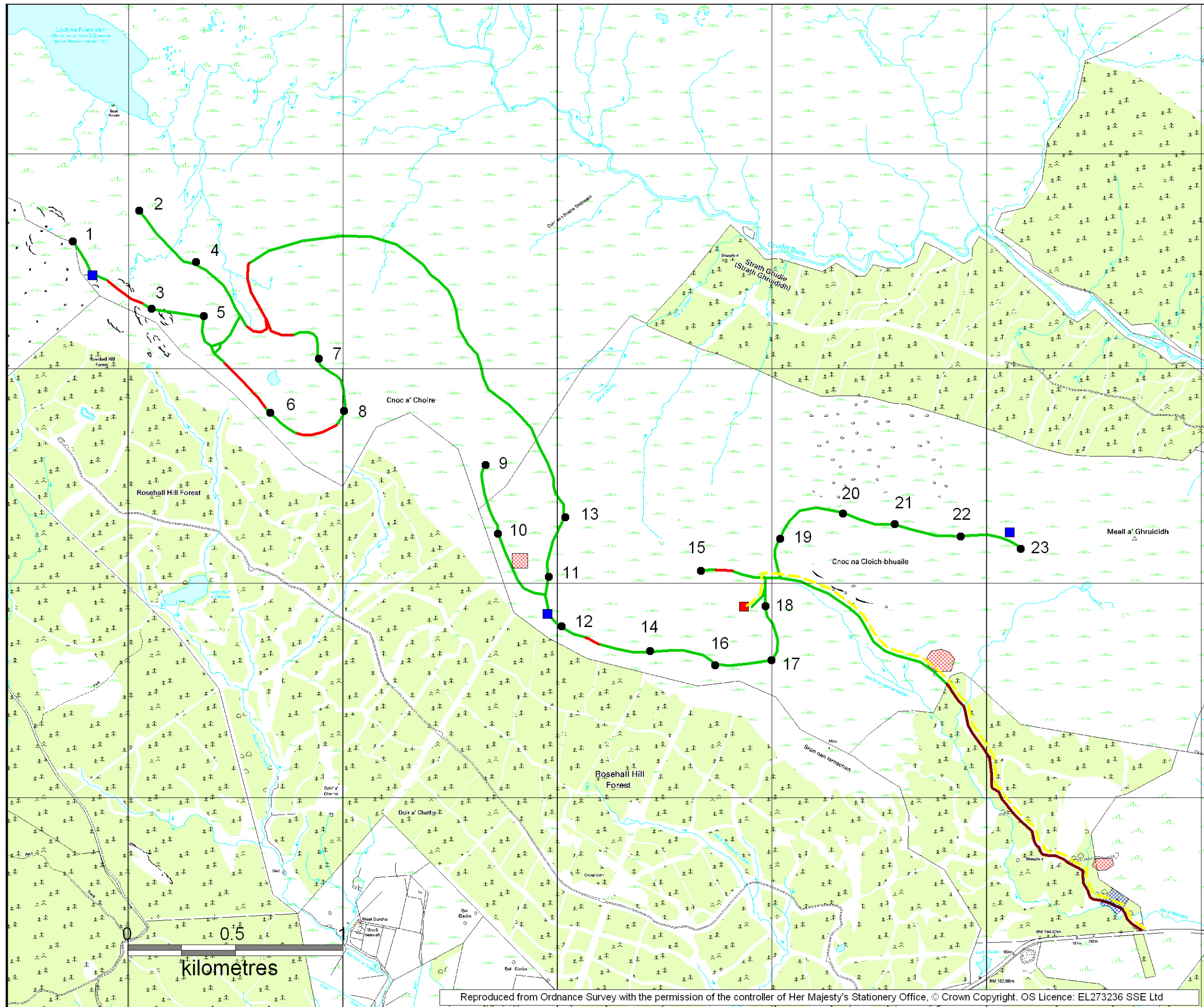
Client:			
Project:	Achany Wind Farm		
Title:	Site location		
Scale:	See scale bar	Date:	April 2005



Figure 4.1

Key

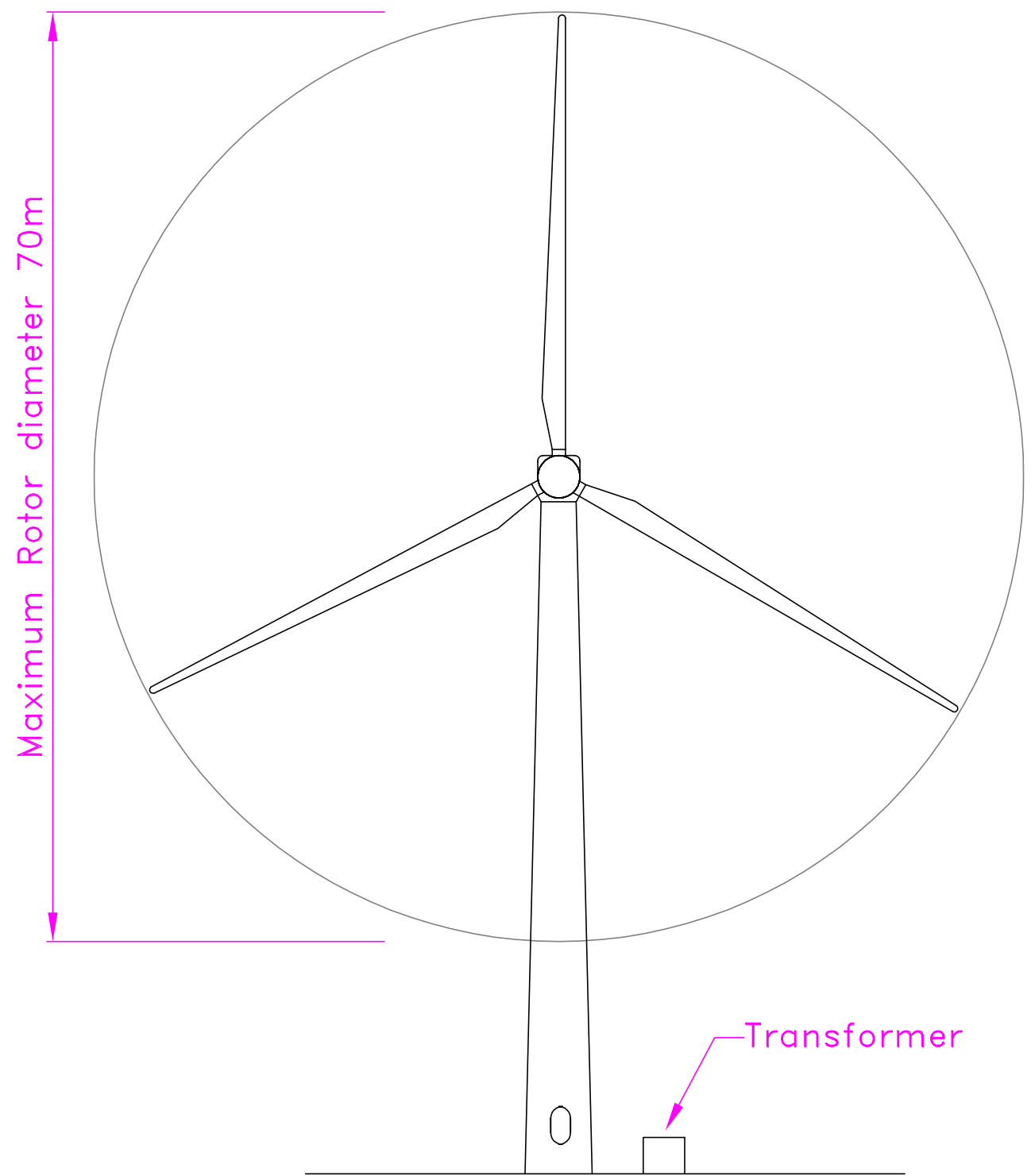
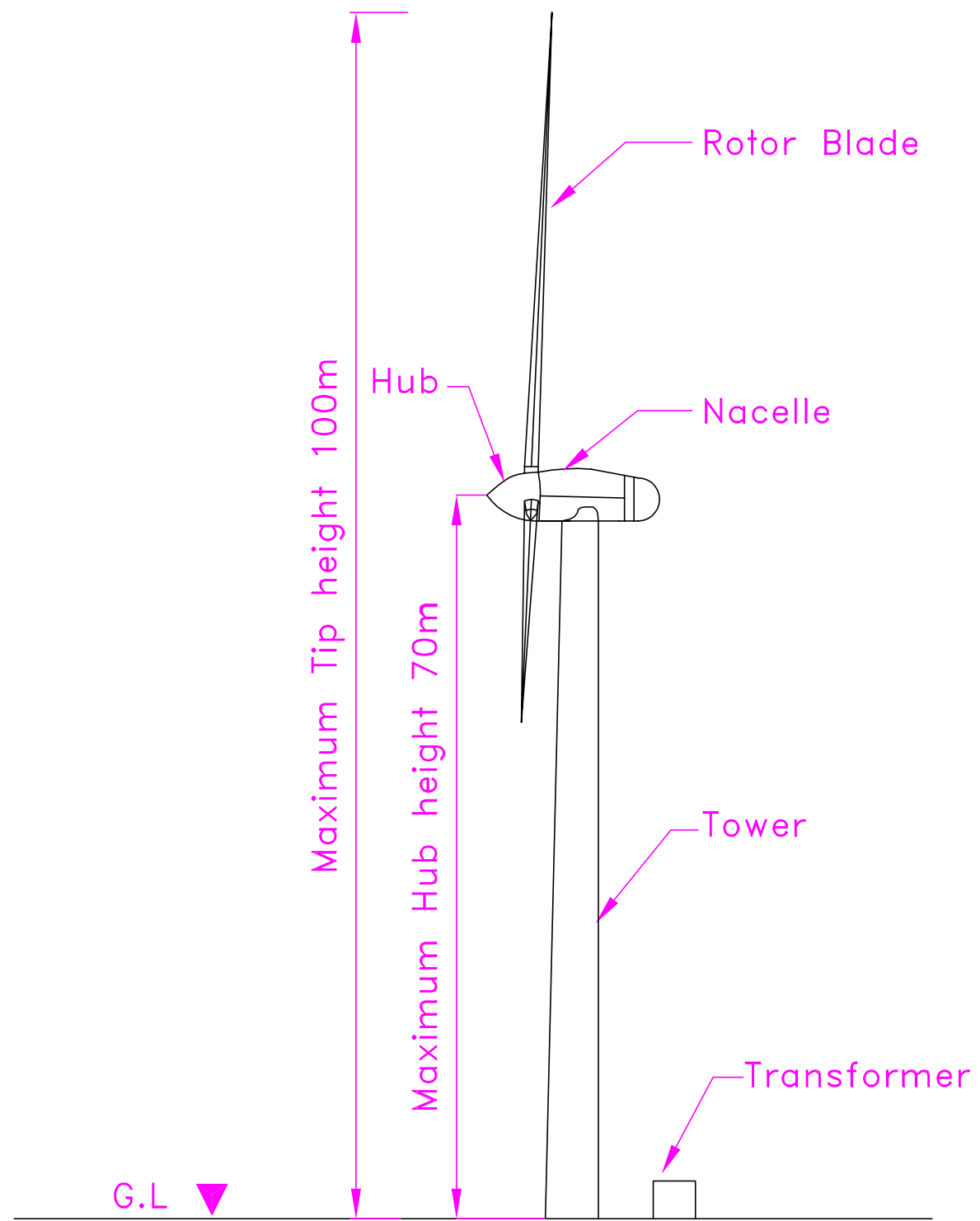
- Point
- Anemometer
- Control building
- Proposed site track
- Proposed upgrade to existing track
- Proposed floated site track
- Borrow pit
- Site compound (temporary)
- On-site grid connection route



Client:			
Project:	Achany Wind Farm		
Title:	Site layout		
Scale:	See scale bar	Date:	June 2005

BMT Cordah Ltd

Reproduced from Ordnance Survey with the permission of the controller of Her Majesty's Stationery Office, © Crown Copyright. OS Licence: EL273236 SSE Ltd



Project Number	Drawing Status
	FOR ILLUSTRATIVE PURPOSES ONLY

WARNING: DRAWING MAY BE REDUCED. DO NOT SCALE.

Title		Location		SSE Drawing Number		Sht No	Rev No
FIGURE 4.2 TYPICAL TURBINE ELEVATION		ACHANY WINDFARM		167/1000/0001		00	00

REV	Date	Drwn	Chkd	Appd	REV	Date	Drwn	Chkd	Appd	REV	Date	Drwn	Chkd	Appd	DATE	16/06/05
															SCALE	N.T.S
															DRAWN	L.SAMUEL
															CHECKED	S.HEYES
															APPROVED	S.HEYES